

DATA BANK NEWSLETTER

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New GitLab distribution services

The Computer Program Services (CPS) are now using GitLab to distribute software with single-user licenses and other packages that have been approved through the regular CPS processes. This includes source code, benchmark models, nuclear data repositories and automated pipelines that perform testing and data processing.

The SERPENT version 2.2 package was made available through the Data Bank in 2022 with version 2.2.0 licensed as package [NEA-1923](#). Within GitLab, updates are provided directly by VTT and available to all licensed users, including version 2.2.1, which was released in April 2023. Licensed users can authenticate with their NEA credentials and [access all versions at any time](#).

We are in the process of moving more CPS packages to use this distribution system, including nuclear data for [FISPACT-II](#), [Serpent](#), SCALE, OpenMC and MCNP, with more being built into the data pipeline. The primary goal of these processes is to ensure upcoming JEFF data are tested with, and ready for, as many simulation tools as possible. If you would like to propose extensions or new tests, [please contact us](#).

New Docker container distribution service

With the launch of the new GitLab at the Data Bank, we have been using Docker containers to create fully reproducible environments for all processes, including data and software verification and validation. The Docker registry was opened on a project-by-project basis so users can directly download a full virtual image of an operating system with the installed software and any required data files. This eliminates the need for on-site installation and ensures users get exactly the same system that was used by the Data Bank for testing.

One important use case is education and training, where students and teachers benefit from having standardised computing environments. This was piloted with the Nuclear Science Committee's International School on Simulation of Nuclear Reactor Systems ([SINUS](#)). The Nuclear Data Service data pipeline images are available to delegates and the first CPS-controlled software being distributed through a Docker image is Serpent-2.2, with more to come.

Benchmark models and collaborative repositories

Users of the NEA benchmarks have long requested a centralised system for sharing resources related to the modelling and simulation of the experiments described in evaluated handbooks. We are pleased to have launched a new service that gives controlled access to models and other resources, starting with Serpent-2.2 models for the International Criticality Safety Benchmark Evaluation Project (ICSBEP). These repositories

Message from the Head of the NEA Data Bank

After more than 10 years, we resumed the NEA Data Bank newsletter in November 2022 to provide you with updates on our services, recent and upcoming events, new packages that are available to our members and other news items of interest. This is the second newsletter in a biannual series.

The Computer Program Services have made a major step forward with controlled distribution of software, data and benchmark models using the Data Bank GitLab system. Licensees of the Serpent-2.2 code now receive access to repositories that include direct updates from the code authors in a rigorously managed release system. Benchmark models for ICSBEP are now being distributed in collaborative repositories accessible to authorised experts, as well as complete virtual computing images on our NEA Docker registry.

In the last six months, the Joint Evaluated Fission and Fusion (JEFF) project has made significant progress with the release of new data libraries, culminating in the JEFF-4.0T2.2 files that are available to experts for testing. The project is working to release the next iteration of test files later in 2023 in preparation for a major release in 2024.

As we deliver these new services, we are grateful for feedback from users to guide our efforts. Please reach out to us with the contact details provided or fill out the survey we have prepared.

Michael Fleming

are available exclusively to recipients of the ICSBEP 2021 Handbook, which can be [requested online from the Data Bank](#).

The initial repository includes over 600 functional models and another 3 000 partial models created using open-source conversion software and geometries for the American MCNP code. The MCNP models, supplied by the International Atomic Energy Agency and the Dutch Nuclear Research Group, are also available. More experiment models will be released in the coming months. Please note that these materials are access-controlled and require approved distribution of the relevant benchmarks. If you are interested in contributing, please make a request for the ICSBEP Handbook or [contact us for more information](#).

JEFF-4.0 test libraries and meetings

After the reform of the Joint Evaluated Fission and Fusion (JEFF) project in late 2021 to (re)establish 12 technical working groups with their own Chairs, the project released new libraries, including '4.0T1' and '4.0T2'. Using the Data Bank GitLab systems to engage the JEFF expert tester community, rapid adjustments were made and after two iterations the latest '4.0T2.2' library was released in February 2023. This includes updates to major actinides, fission yields, thermal scattering and a wide range of other isotopes from the JEFF experts and International Nuclear Data Evaluation Network ([INDEN](#)).

The JEFF Nuclear Data Week was held 24-28 April 2023 with over 100 in-person and virtual participants. Experts are working to produce the next test library, which will be released in Q4 2023.

The next JEFF meetings will take place in person at the NEA offices during the week of 21-25 November 2023.

Save the date: Nuclear data stakeholder meeting

Following an event held in 2019 to stimulate engagement with the wider nuclear data user and stakeholder communities, the NEA Data Bank will host another stakeholder event on 20 September 2023 at the NEA offices. The MBDAV, JEFF Co-ordination Group and other experts are working with the NEA to finalise invitations for speakers and will announce more information in the coming weeks.

Survey for the 2024 training courses

The NEA Data Bank offers training courses in several computer programs used in nuclear energy applications. Since 2020 these include both in-person and virtual training events that use an e-learning platform to deliver course materials and hands-on tutorials. We expanded the options for 2023 and have added new questions regarding IT systems and changes to some software licenses that occurred in 2023. If you or any of your colleagues would be willing to participate, please complete the [online survey here](#). It closes 31 July 2023.

Upcoming events

Based on results from the 2022 user survey, the NEA Data Bank will organise several new courses in 2023. As part of a new partnership with the European Organization for Nuclear Research (CERN) team developing FLUKA.CERN, the NEA will host a new training on 6-10 November. As the most requested Data Bank software for training in our latest survey of users, the NEA will also host a first Serpent-2 training on 14-17 November. You can find more information about these courses [online here](#).

Course	Dates	Venue	Cost (EUR)
SCALE-TRITON	22-26 MAY	NEA	2 300
FISPACT-II	20-22 JUN	NEA	600
FLUKA.CERN	6-10 NOV	NEA	TBA
SERPENT-2	14-17 NOV	NEA	700
NJOY	4-8 DEC	NEA	TBA

New public interface for GitLab content

We have created a [new landing page for GitLab-related content](#). As we move a mixture of access-controlled and publicly-accessible data and other content to the NEA GitLab, users can review what packages are available and immediately download or make requests for access. Private working areas and delegates' area on MyNEA require permissions and authentication in all cases.

Over the coming months more information will be added as more packages are moved to GitLab, and this interface will replace legacy site content that was not suitable for migration to the NEA website or delegates' area, including the archives of JEFF and other nuclear data files.



Participants in the April 2023 JEFF nuclear data week, which included in-person and virtual participation in hybrid events.

New computer program and data additions and updates (dates indicate most recent update)

Computer programs

24-APR-23	NEA-1001	KORIGEN, Isotope Inventory, Radiation Heat from PWR Burnup (Tested)
24-APR-23	NEA-1929	POSY, Power system model for system costs evaluation - Will be released soon (Tested)
24-APR-23	NEA-1923	SERPENT V2.2.X, 3-D continuous-energy Monte Carlo reactor physics burnup calculation, lattice physics applications (Tested)
31-JAN-23	IAEA1379	PREPRO2021, Data Preparation and Management, Subsidiary Calculations (ENDF Format) (Tested)
25-JAN-23	CCC-0638	TART2022, 3D Coupled Neutron-Photon Combinatorial Geometry, Time Dependent, Monte Carlo Transport Code (Arrived)
25-JAN-23	CCC-0767	SWORD 7.0, SoftWare for Optimization of Radiation Detectors (Arrived)
18-JAN-23	NEA-1864	GEF 2021/1.1, Code for Simulation of Nuclear Fission Process (Tested)
13-DEC-22	NEA-1930	MELGENBRIEF, A Code To Extract Control Volume Information From MELGEN Output File of The MELCOR code (Arrived)
13-DEC-22	NEA-1922	MEXTRA 1.1, A Code To Extract Numerical Value From MAAP Code Output Files (Arrived)
09-DEC-22	PSR-0317	TRANSX-2.15, Neutron Gamma Particle Transport Tables from MATXS Format Cross-Sections (Arrived)
30-NOV-22	IAEA1441	ZZ POINT-2021, ENDF/B-VIII.0 Temperature Dependent Cross Section Library (Arrived)
03-NOV-22	PSR-0610	GADRAS-DRF-18.8.13, Gamma Detector Response and Analysis Software-Detector Response Function (Arrived)
25-OCT-22	CCC-0858	TMAP7, Tritium Migration Analysis Program (Arrived)
20-OCT-22	CCC-0783	RASCAL 4.3, Radiological Assessment Systems for Consequence Analysis (Arrived)

Integral data

01-FEB-23	CSNI-2044	ATLAS-2 PROJECT, 2nd Phase of The Advanced Thermal-hydraulic Test Loop for Accident Simulation Project (Arrived)
10-NOV-22	NEA-1486	ICSBEP2021-HANDBOOK, International Criticality Safety Benchmark Experiment Handbook (Arrived)
09-NOV-22	NEA-1765	IRPHE2021-HANDBOOK, International Handbook of Evaluated Reactor Physics Benchmark Experiments (Arrived)

The NEA Data Bank acts as an international centre of reference for its participating countries with respect to basic nuclear tools, such as computer codes and nuclear data, used for the analysis and prediction of phenomena in the nuclear field. It offers a direct service to its users by providing the means to develop, improve and validate these tools, distributing them in accordance with international rules, and organising training and education activities to support nuclear knowledge management.

Contact points and online resources

Website: <https://oecd-nea.org/databank>

Codes: programs@oecd-nea.org

Nuclear data: data@oecd-nea.org

GitLab: <https://databank.io.oecd-nea.org>